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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/775,429

Applicant(s)

JUBRAN ET AL.

Examiner

Janis L. Dote

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 28 October 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 15-20 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-14 and 21-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-27 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>9/27/04; 10/28/04</u> . | 6) <input type="checkbox"/> Other: _____ |

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1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

I. Claims 1-14 and 21-27, drawn to (a) organophoto-receptors, (b) electrophotographic image apparatuses, and (c) azine compounds, classified, respectively, in class 430, subclass 72, class 399, subclass 159, and class 546, subclass 99.

II. Claims 15-20, drawn to electrophotographic imaging processes, classified in class 430, subclass 126.

2. The inventions are distinct, each from the other because of the following reasons:

Inventions I(a) (organophotoreceptors) and II are related as product and process of use. The inventions can be shown to be distinct if either or both of the following can be shown: (1) the process for using the product as claimed can be practiced with another materially different product or (2) the product as claimed can be used in a materially different process of using that product (MPEP § 806.05(h)). In the instant case the product as claimed can be used in a materially different process, such as a process comprising the steps of charging the organophotoreceptor, imagewise exposing the charged organophotoreceptor to form an electrostatic latent image,

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developing the latent image with a toner, fixing the developed image on the organophotoreceptor, and laminating a clear coversheet on the fixed toned image to form a permanent image. This process does not require transferring the toned image to a substrate as required in the process of Group II.

Inventions II and I(b) (apparatuses) are related as process and apparatus for its practice. The inventions are distinct if it can be shown that either: (1) the process as claimed can be practiced by another materially different apparatus or by hand, or (2) the apparatus as claimed can be used to practice another and materially different process. (MPEP § 806.05(e)). In this case the apparatus as claimed can be used to practice another and materially different process, such as the process described supra, which does not require transferring the toned image to a substrate as required by the process in Group II.

Inventions I(c) (azine compounds) and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have different functions and different effects. Invention II is drawn to a process that comprises the steps of charging and imagewise exposing an organophotoreceptor

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to form a charge pattern, developing the charge pattern with a toner to form a toner image, and transferring the toner image to a substrate. Invention I(c) (azine compounds) is drawn to a compound which can be used in compositions other than an organophotoreceptor, such as a charge transport material in an electroluminescence device.

Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, and as shown by their different classification, restriction for examination purposes as indicated is proper.

3. During a telephone conversation with Mr. Kam Law (Reg. No. 44,205) on Mar. 7, 2005, a provisional election was made with traverse to prosecute the invention of Group I, claims 1-14 and 21-27. Affirmation of this election must be made by applicants in replying to this Office action.

Claims 15-20 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicants are reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be

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amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. Applicants' claim for domestic priority under 35 U.S.C. 119(e) is acknowledged. However, the provisional application upon which priority is claimed fails to provide adequate support under 35 U.S.C. 112 for claims 1-14 and 21-27 of this application.

Provisional Application 60/466,813 (Application'813) does not provide an adequate written description of the following subject matter recited in the instant claims.

(1) The generic formula recited in instant claims 1-14 and 21-27 for the following reasons:

(1a) The generic group Y "comprises a 9-fluorenylidene group having at least a solubilizing substituent, wherein the solubilizing substituent comprises a $-(CH_2)_nH$ group where n is an integer between 1 and 50, and one or more of the methylene groups is optionally replaced by . . . N, C, B, Si, P . . . O=S=O, a heterocyclic group . . . an NR_a group, a CR_b group, a CR_cR_d group, or a SiR_eR_f group where R_a , R_b , R_c , R_d , R_e , and R_f are,

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independently, a bond, H, a hydroxyl group, a thiol group, a carboxyl group, an amino group, an alkyl group, an alkoxy group, an alkenyl group, a heterocyclic group, an aromatic group, or part of a ring" (emphasis added).

Application'813 discloses an azine compound where the Y group in the formula recited in instant claims 1, 8, and 21 is a particular 9-fluorenylidene group where the two benzene rings in the 9-fluorenylidene group are each substituted with the groups R_1 or R_2 , respectively. The group R_1 is an alkenyl group or $(CH_2)_nCH_3$ where n is an integer between 1 and 30, and one or more of the methylene groups can be optionally replaced by O, S, C=O, O=C-O, O=C-NR₅, sulfoxide, sulfate, phosphate, an aryl group, urethane, urea, a NR₆ group, a CHR₇ group, or a CR₈R₉ group, where R₅, R₆, R₇, R₈, and R₉ are, independently, H, hydroxyl, thiol, an amine group, an alkyl group, an alkaryl group, or an aryl group, and R_2 is a hydrogen, NO₂, halogen, hydroxyl, ester, an amine group, an alkyl group, an alkaryl group, or an aryl group. Application'813, page 3, lines 1-8; page 5, lines 11-18; and page 20, line 19, to page 21, line 1.

(1b) The group R "comprises . . . an alkenyl, a heterocyclic group . . ." (emphasis added) recited in instant claims 1, 8, and 21.

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Application'813 discloses that the equivalent group R_3 in formula (1) of Application'813 "is hydrogen, an alkyl group, an aryl group, or an alkaryl group" (emphasis added).

Application'813, page 3, lines 8-9; page 5, lines 18-19; and page 21, lines 1-2.

(1c) The group X "comprises an arylamine group" (emphasis added) recited in instant claims 1, 8, and 21.

Application'813 discloses that the equivalent group R_4 "is an (N,N-disubstituted)arylamine group, a carbazole group, or a julolidine group" (emphasis added). Application'813, page 3, lines 9-10; page 5, lines 19-20; and page 21, lines 2-3.

(2) The "solubilizing substituent comprises a $-C(=O)O-R_5$ group where R_5 is an alkyl group, an alkenyl group, or an aromatic group" recited in instant claims 3, 10, and 23.

Application'813 exemplifies four particular compounds where one of the benzene rings in the 9-fluorenylidene group is substituted with the group $-C(=O)O-(CH_2)_3CH_3$ or the group $-C(=O)O-CH_2CH_3$. Application'813, pages 21-22. The two alkyl groups, ethyl and butyl, do not provide an adequate written description when the R_5 group is an alkenyl group or an aromatic group. The recited "alkyl group" in instant claims 3, 10, and 23, is broader than the two particular alkyl groups

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disclosed in Application'813 because it encompasses alkyl groups that are not ethyl and butyl, such as methyl, pentyl, etc.

(3) The "9-fluorenylidene group further comprises at least a substituent . . ." recited in instant claims 4, 11, and 24.

As discussed in item (1a) above, Application'813 discloses that the Y group in the formula recited in instant claims 4, 11, and 24 is a particular 9-fluorenylidene group where one of benzene rings of the 9-fluorenylidene group is substituted with the group R₂. The limitation recited in instant claims 4, 11, and 24 is broader than the disclosure in Application'813 because the substituent is not limited to the benzene ring that is not substituted with the solubilizing substituent, but can be attached to any of the carbon atoms in the 9-fluorenylidene group. In addition, Application'813 does not disclose that the group R₂ can be a cyano group, a thiol group, a carboxyl group, an alkoxy group, or an alkenyl group as recited in instant claims 4, 11, and 24. Application'813, page 3, lines 1-8; page 5, lines 11-18; and page 20, line 19, to page 21, line 1.

(4) The formula in instant claims 25-27 for the following reasons:

(4a) The group R₆ "comprises . . . an alkenyl, a heterocyclic group . . ." (emphasis added) recited in instant claim 25, for the reasons discussed in item (1b) above.

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(4b) The group X "comprises an arylamine group" (emphasis added) recited in instant claim 25 for the reasons discussed in item (1c) above.

(4c) The group R₈ "comprises . . . a cyano group . . . a thiol group, a carboxyl group . . . an alkoxy group, an alkenyl group . . ." (emphasis added) recited in instant claim 25 for the reasons discussed in item (3) above.

(4d) The group R₇ "comprises a -(CH₂)_nH where n is an integer between 1 and 50, and one or more of the methylene groups is optionally replaced by . . . N, C, B, Si, P . . . O=S=O, a heterocyclic group . . . an NR_a group, a CR_b group, a CR_cR_d group, or a SiR_eR_f group where R_a, R_b, R_c, R_d, R_e, and R_f are, independently, a bond, H, a hydroxyl group, a thiol group, a carboxyl, an amino group, an alkyl group, an alkoxy group, an alkenyl group, a heterocyclic group, an aromatic group, or part of a ring" (emphasis added).

For the reasons discussed in item (1a) above, Application'813 does not recognize that the integer n can be "1 to 50" as recited in instant claim 25. Nor does Application'813 disclose that one or more of the methylene groups can be replaced by N, C, B, P, O=S=O, a heterocyclic group, a "CR_b" group or a SiR_eR_f group where R_b, R_e, and R_f are, independently, a bond, H, a hydroxyl group, a thiol group, a

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carboxyl, an amino group, an alkyl group, an alkoxy group, an alkenyl group, a heterocyclic group, an aromatic group, or part of a ring. Nor does Application'813 disclose that one or more of the methylene groups can be replaced by a NR_a or a CR_cR_d group where R_a , R_c , and R_d are, independently, a bond, a carboxyl group, an alkoxy group, an alkenyl group, a heterocyclic group, or part of a ring.

(5) The group " R_7 comprises a $-C(=O)O-R_{13}$ group where R_{13} is an alkyl group, an alkenyl group, or an aromatic group" recited in instant claim 26 for the reasons discussed in item (2) above.

(6) The "belt" in instant claim 7.

Application'813 at page 3, line 18, discloses a "flexible belt." The term "belt" is broader than the disclosed flexible belt in Application'813 because it encompasses belts that are not flexible.

Accordingly, the subject matter recited in instant claims 1-14 and 21-27 is accorded benefit of the filing date, Feb. 10, 2004, of the instant application.

6. The abstract of the disclosure is objected to because it is not limited to a single paragraph. Correction is required. See MPEP § 608.01(b).

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Applicants are reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

7. The disclosure is objected to because of the following informalities:

(1) The specification discloses that the solubilizing substituent comprises a $-(CH_2)_nH$ group where n is an integer between 1 and 50 and one or more of the methylene groups can be replaced by N, C, B, P, or a "CR_b." See the specification, page 3, lines 9-11, page 8, lines 20-24, and page 21, line 1-4. However, it is not clear how a methylene group, which is divalent, can be replaced with groups that are not divalent.

(2) The specification further discloses that the solubilizing substituent comprises a $-(CH_2)_nH$ group where n is an integer between 1 and 50, one or more of the methylene groups

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can be replaced by a NR_a group, a " CR_b " group, a CR_cR_d group, or a SiR_eR_f group where the R groups can be a bond. See the specification, page 3, lines 11-12, page 8, lines 24-25, and page 21, lines 3-4. However, it is not clear to what the R groups in the groups are bonded.

(3) The specification also discloses that the solubilizing substituent comprises a $-(\text{CH}_2)_n\text{H}$ group where n is an integer between 1 and 50, one or more of the methylene groups can be replaced by a NR_a group, a " CR_b " group, a CR_cR_d group, or a SiR_eR_f group where the R groups can be part of a ring group. See the specification, page 3, lines 11-14, page 8, lines 24-27, and page 21, lines 3-6. However, it is not clear what is meant by the term "part of a ring group." The specification does not define said group.

(4) The use of trademarks, e.g., Calgon [sic: CALGON] at page 12, line 11, has been noted in this application. It should be capitalized wherever it appears and be accompanied by the generic terminology. This example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any

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manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

8. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required:

(1) In claims 3, 10, and 23, the recitation, "solubilizing substituent comprises a $-C(=O)O-R_5$ group where R_5 is an alkyl group, an alkenyl group, or an aromatic group" lacks antecedent basis in the specification. See page 22 of the specification, which discloses four particular compounds where one of the benzene rings in the 9-fluorenylidene groups is substituted with the group $-C(=O)O-(CH_2)_3CH_3$ or the group $-C(=O)O-CH_2CH_3$. The specification does not disclose that the solubilizing substituent comprises the generic ester formula recited in instant claims 3, 10, and 23. The two alkyl groups, ethyl and butyl, do not provide an adequate written description when the R_5 group is an alkenyl group or an aromatic group. Moreover, the recited "alkyl group" in instant claims 3, 10, and 23 is broader than the two particular alkyl groups disclosed in the instant specification, because it encompasses alkyl

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groups that are not ethyl and butyl, such as methyl, pentyl, etc.

(2) In claim 7, the term "belt" lacks antecedent basis in the specification. See page 3, line 17, of the specification, which discloses a "flexible belt." The term "belt" is broader than the disclosed flexible belt because it encompasses belts that are not flexible.

(3) In claim 26, the recitation, "R₇ comprises a -C(=O)O-R₁₃ group where R₁₃ is an alkyl group, an alkenyl group, or an aromatic group" lacks antecedent basis in the specification for the reasons discussed in item (1) above.

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-14 and 21-27 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

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Instant claims 1, 8, 21, and 25 are indefinite in the phrase " R_a , R_b , R_c , R_d , R_e , and R_f , are, each independently . . . part of a ring group" because it is not clear what is meant by the term "part of a ring group." The instant specification does not define said group.

Instant claims 1, 8, and 21 are further indefinite in the phrase "the solubilizing substituent comprises a $-(CH_2)_nH$ group where n is an integer between 1 and 50, and one or more of the methylene groups is optionally replaced by a . . . N , C , B , P , . . . a CR_b . . ." because it is not clear how a methylene group, which is divalent, can be replaced with groups that are not divalent.

Instant claims 1, 8, and 21 are also indefinite in the phrase "solubilizing substituent comprises a $-(CH_2)_nH$ where n is an integer between 1 and 50, and one or more of the methylene groups is optionally replaced by . . . an NR_a group, a CR_b group, a CR_cR_d group, or a SiR_eR_f group" where the R groups can be "a bond" because it is not clear to what the R groups in the groups are bonded.

Instant claim 25 is further indefinite in the phrase " R_7 comprises a $-(CH_2)_nH$ group where n is an integer between 1 and 50, and one or more of the methylene groups is optionally replaced by a . . . N , C , B , P , . . . a CR_b . . ." because it is

not clear how a methylene group, which is divalent, can be replaced with groups that are not divalent.

Instant claim 25 is also indefinite in the phrase "R₇ comprises a -(CH₂)_nH where n is an integer between 1 and 50, and one or more of the methylene groups is optionally replaced by . . . an NR_a group, a CR_b group, a CR_cR_d group, or a SiR_eR_f group" where the R groups can be "a bond" because it is not clear to what the R groups in the groups are bonded.

11. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f), or (g) prior art under 35 U.S.C. 103(a).

14. Claims 1, 2, 21, 22, 25, and 27 are rejected under 35 U.S.C. 102(b) as being anticipated by US 4,415,640 (Goto).

Goto discloses an electrophotographic organic photoreceptor comprising an electrically conductive substrate and a light-sensitive layer comprising a charge generating material and a charge transport material represented by formula (I) disclosed at col. 3, lines 20-42. Col. 3, lines 13-47; col. 7, lines 23-33; and col. 8, line 53, to col. 9, line 3.

Goto teaches that the charge transport material of formula (I) can be represented by compound (11) at col. 5. Compound (11) meets the compositional limitations of the formula recited in instant claims 1, 2, 21, 22, 25, and 27. Compound (11) is represented by the formula recited in the instant claims when: (1) the group Y is 9-fluorenylidene where one of the benzene rings of the 9-fluorenylidene is substituted with the group $-N-(CH_3)_2$; (2) the group R is hydrogen; and

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(3) the group X is the p-(N,N-disubstituted) arylamine group N,N-diethylamine-4-naphthylene. The group $-N-(CH_3)_2$ meets the group $-(CH_2)_nH$ when n is 2, and the methylene is replaced with the group NR_a where R_a is methyl.

15. Claims 7-9 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 5,430,526 (Ohkubo) combined with Goto.

Ohkubo discloses an electrophotographic image forming apparatus comprising all the components recited in instant claims 8, 9, and 14, but for the particular photoreceptor. Fig. 1 and col. 2, line 56, to col. 3, line 56. The apparatus shown in Fig. 1 comprises an electrophotographic photosensitive drum 3, contact charging member 4, an exposure unit that comprises a laser beam L, and a developing unit 5 that comprises a toner. The photosensitive drum meets the drum limitation recited in instant claim 7.

Ohkubo does not disclose the use of the photoreceptor recited in the instant claims. However, Ohkubo does not limit the type of photoreceptor used. See reference claim 1.

Goto discloses an electrophotographic organic photoreceptor comprising a photosensitive layer as described in paragraph 14 above, which is incorporated herein by reference. In addition,

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Goto teaches that an organic photoreceptor comprising the Goto charge transport compound has higher sensitivity, less residual potential, and excellent durability, i.e., maintains stable electrophotographic characteristics over an extensive period of time. Col. 2, line 62, to col. 3, line 5.

It would have been obvious for a person having ordinary skill in the art to use the photosensitive layer disclosed by Goto as the photosensitive layer on the conductive drum in the apparatus disclosed by Ohkubo, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic apparatus that has higher sensitivity, less residual potential, and excellent durability over an extensive period of time.

16. Claims 4 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkubo combined with Goto as applied to claim 8 above, further combined with additional teachings in Goto.

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Goto discloses an electrophotographic organic photoreceptor and a charge transport material as described in paragraph 14 above, which is incorporated herein by reference.

Okhubo combined with Goto renders obvious an electrophotographic imaging apparatus as described in paragraph 15 above, which is incorporated herein by reference.

The Goto compound (11) meets the compositional limitations of the formula recited in instant claims 4 and 24, except for the 9-fluorenylidene group comprising a substituent as recited in instant claims 4, 11, and 24.

However, Goto discloses that compound (11) represents formula (I) disclosed at col. 3, lines 20-47. Goto teaches that both benzene rings in the 9-fluorenylidene group are substituted with the groups X and Y, respectively, where the X and Y groups can be a substituted amino, a halogen, an alkyl group, an amino group, or an alkoxy group. Col. 3, lines 43-47, and compounds (10) and (12) at col. 5. The Goto compound (11) meets the substituted 9-fluorenylidene limitation recited in instant claims 4, 11, and 24, when the non-substituted benzene ring in the 9-fluorenylidene group in compound (11) is substituted with a halogen, such as chlorine or bromide as shown in compounds (10) and (12), or an alkyl group, a substituted or

unsubstituted amino group, a hydroxyl group, or an alkoxy group, as taught by Goto.

According to Goto, the charge transport compound of formula (I) disclosed at col. 3, lines 20-47 has excellent compatibility with binder resins and carrier transportability and is stable against heat and light. Col. 2, lines 49-55. Goto further discloses that an organic photoreceptor comprising said charge transport compound has higher sensitivity, less residual potential, and excellent durability, i.e., maintains stable electrophotographic characteristics over an extensive period of time. Col. 2, line 62, to col. 3, line 5.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Goto, to substitute the benzene ring in the 9-fluorenylidene group that is not substituted with the substituted amino group in compound (11) with a halogen, an alkyl, an alkoxy, or a substituted or unsubstituted amino group, a hydroxyl group, or an alkoxy group as taught by Goto, such that the resultant charge transport compound is within the compositional limitations of the formula recited in the instant claims 2, 11, and 24, and to use the resultant compound as the charge transport material in the organophotoreceptor disclosed by Goto and in the imaging apparatus rendered obvious over the combined

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teachings of Ohkubo and Goto. That person would have had a reasonable expectation of successfully obtaining a charge transporting material, an organic photoreceptor, and an electrophotographic imaging apparatus having the benefits disclosed by Goto.

17. Claims 1, 2, 5, and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,528,645 B1 (Hamasaki) combined with Goto.

Hamasaki discloses a single-layered organic photoreceptor comprising an electrically conductive substrate and a photosensitive layer comprising particular titanyl phthalocyanine crystals, an electron transferring compound, and a hole transferring compound. Col. 3, lines 54-57; and, for example, example 1 at col. 23, line 65, to col. 24, line 17. The electron transferring compound meets the electron transporting compound recited in instant claim 6. According to Hamasaki, the single-layered organic photoreceptor has good sensitivity characteristics "that are always stable regardless of the lapsed time after preparing the coating solution" comprising said titanyl phthalocyanine crystals. Col. 3, lines 64-67, and Table 2, example 1.

Hamasaki does not exemplify a single-layered organic photoreceptor comprising the charge transport compound recited in the instant claims. However, Hamasaki discloses that as the hole, i.e., charge, transferring material, "there can be used any of various hole transferring compounds which have conventionally been known," such as hydrazones. Col. 13, lines 11-13; and col. 14, line 3.

Goto teaches a hydrazone, i.e., an azine, charge transport compound that meets the compositional limitations of the formula recited in instant claims 1 and 2. The discussion of the Goto compound (11) in paragraph 14 above is incorporated herein by reference. According to Goto, the Goto charge transport compound (11) has excellent compatibility with binder resins and carrier transportability and is stable against heat and light. Col. 2, lines 49-55. Goto also teaches that an organic photoreceptor, such as a single-layered photoreceptor, comprising said charge transport compound has higher sensitivity, less residual potential, and excellent durability, i.e., maintains stable electrophotographic characteristics over an extensive period of time. Col. 2, line 62, to col. 3, line 5; col. 7, lines 39-45; and Figs. 5 and 6.

It would have been obvious for a person having ordinary skill in the art, in view of the teachings of Goto, to use the

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Goto charge transport compound (11) as the hole transferring compound in the single-layered organic photoreceptor disclosed by Hamasaki because that person would have had a reasonable expectation of successfully obtaining a single-layered electrophotographic organic photoreceptor having higher sensitivity, less residual potential, and excellent durability, as disclosed by Goto.

18. Claims 7-9 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohkubo combined with Hamasaki and Goto.

Ohkubo discloses an electrophotographic image forming apparatus comprising all the components recited in instant claims 8, 9, and 12-14, but for the particular photoreceptor. The discussion of Ohkubo in paragraph 15 above is incorporated herein by reference.

Ohkubo does not disclose the use of the photoreceptor recited in the instant claims. However, Ohkubo does not limit the type of photoreceptor used. See reference claim 1.

Hamasaki combined with the teachings of Goto renders obvious a single-layered organic photoreceptor comprising a photosensitive layer as described in paragraph 17 above, which is incorporated herein by reference. The photoreceptor meets

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the compositional limitations recited in instant claims 7-9 and 12-14.

It would have been obvious for a person having ordinary skill in the art to use the photosensitive layer rendered obvious over the combined teachings of Hamasaki and Goto as the photosensitive layer on the conductive drum in the apparatus disclosed by Ohkubo, because that person would have had a reasonable expectation of successfully obtaining an electrophotographic apparatus having the benefits disclosed by both Hamasaki and Goto, i.e., good sensitivity characteristics, less residual potential, and excellent durability.

19. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

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20. The following obviousness-type double patenting rejections are provisional because the conflicting claims have not in fact been patented.

21. Claims 1-3, 5, 8-10, 12, 14, 21-23, and 25-27 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-30 of copending Application No. 10/670,943 (Application' 943).

Although the conflicting claims are not identical, they are not patentably distinct from each other because the claimed subject matter recited in Application' 943 renders obvious the subject matter recited in the instant claims.

Reference claim 5, which depends from reference claim 1, recites an organophotoreceptor comprising a photoconductive element and an electrically conductive substrate, where the photoconductive element comprises a charge generation material and a charge transport compound represented by one of the compounds recited in reference claim 5. Reference claim 6, which depends from reference claim 1, requires that the photoconductive element further comprise a second charge transport compound, which meets the second charge transport limitation recited in instant claim 5. Reference claim 13,

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which depends from reference claim 9, recites an electrophotographic imaging apparatus comprising a light imaging component and an organophotoreceptor comprising a photoconductive element and an electrically conductive substrate, where the photoconductive element comprises a charge generation material and a charge transport compound represented one of the compounds recite in reference claim 13. Reference claim 16, which depends from reference claim 9, requires that the apparatus further comprise liquid toner disperser, which meets the toner disperser component recited in instant claim 14. Reference claim 22, which depends from reference claim 9, requires that the photoconductive element further comprise a second charge transport compound, which meets the second charge transport limitation recited in instant claim 12. Reference claim 30, which depends from reference claim 26, recites a charge transport compound represented by one of the compounds recited in reference claim 30.

The charge transport compounds in reference claims 5, 13, and 30 comprise an azine group. The compounds meet the compositional limitations of the formula recited in instant claims 1-3, 8-10, and 21-23, and 25-27. The compounds are represented by the formula recited in the instant claims when:

- (1) the group Y is 9-fluorenylidene where one of the benzene

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rings of the 9-fluorenylidene is substituted with the group $-C(=O)O-(CH_2)_3CH_3$ or the group $-C(=O)O-CH_2CH_3$; (2) the group R is hydrogen; and (3) the group X is a carbazole.

It would have been obvious for a person having ordinary skill in the art, in view of the subject matter recited in the claims of Application'429, to make and use a charge transport compound, an organophotoreceptor, and an electrophotographic apparatus as recited in the instant claims, because person would have had a reasonable expectation of successfully obtaining a charge transport compound that is capable of transporting charges in an organophotoreceptor, and an organophotoreceptor and an electrophotographic imaging apparatus that are capable of being used in an electrophotographic process to provide toned images.

22. Claim 7 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-30 of copending Application'943 in view of Diamond, Handbook of Imaging Materials, pp. 395-396.

The subject matter recited in the claims of Application'943 renders obvious the organophotoreceptor and the electrophotographic imaging apparatus as described in paragraph 21 above, which is incorporated herein by reference.

The reference claims of Application'943 do not recite that the organophotoreceptor comprises a belt or a drum to support the electrically conductive substrate as recited in instant claim 7.

However, the use of a belt or drum in organophotoreceptors is well known in the electrophotographic arts. Diamond further discloses that the support of the photoreceptor can be a metal cylinder, i.e. a drum, or a flexible belt. Page 395, lines 12-13, and page 396, lines 4-9.

It would have been obvious for a person having ordinary skill in the art, in view of teachings in Diamond and the subject matter recited in the reference claims of Application'971, to use a metal cylinder or a flexible belt to support the electrically conductive substrate in the organophotoreceptor rendered obvious over the claimed subject matter recited in Application'943 because that person would have had a reasonable expectation of successfully obtaining an organophotoreceptor that is capable of being used in an electrophotographic process to provide toned images.

23. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD

Mar. 11, 2005

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